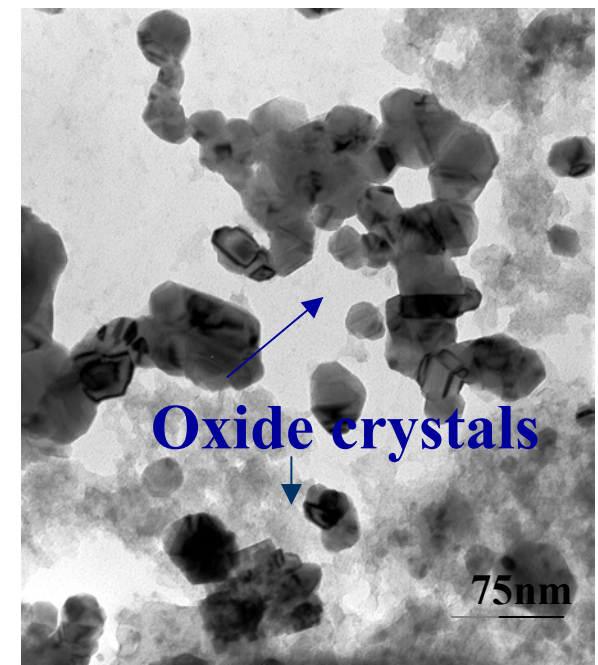
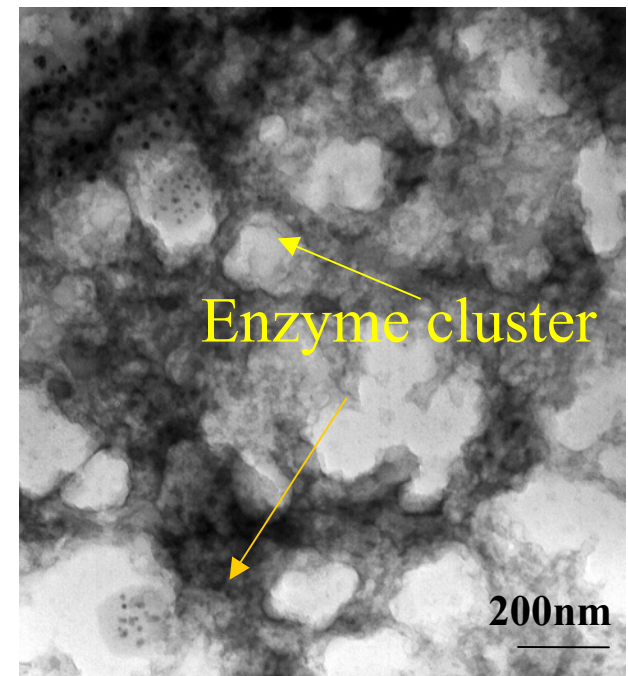


# Bio-doped Electronic Ceramics for Use in Microsensors

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The incorporation of enzymes such as urease in  $\text{MoO}_3$  sol-gel matrices was successfully accomplished in this project. The significance of this result is the potential to develop resistive type gas detection systems for biosensing applications (in this case, urea monitoring devices) by exploiting specific biochemical reactions between the receptor (urease) and the analyte (urea). These reactions release gaseous species that can be detected by metal oxides *rapidly*, and with high *specificity*. Evidence of retention of the enzyme activity in these bio-doped gels was obtained by using controlled urea testing solutions. The effects of thermal stability and long-term storage of the bio-gels were also evaluated. These novel biosensors may be used as fast and non-invasive tools for disease diagnosis, and in environmental monitoring applications (e.g. heavy metal contamination).



## Outreach Activities

**This project has given the opportunity to undergraduate students from our College of Engineering to be engaged in ceramics and sensor research. Ted Feldman, shown right, was a freshman in engineering science when he joined our lab to work on this project. Ted participated in the URECA competition that is held annually in Stony Brook celebrating undergraduate research, and was awarded a summer fellowship. He considers his “early start” in hands-on research a unique and valuable experience.**

**In an effort to effectively disseminate the knowledge acquired from this work and transfer the technology, the PI has given seminars and demos to National Laboratories in USA and Japan, sensor and electronics industries and to NYS Centers of Excellence; she has also been awarded the Promising Inventor Award from SUNY’s Research Foundation.**

